



G-228
SPECIFICATION FOR
THE CONSTRUCTION OF
GAS MAIN AND SERVICES

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G-228 SPECIFICATION FOR THE CONSTRUCTION OF GAS MAIN AND SERVICES

Specifications and Standards:

All work embraced herein shall be done in accordance with the applicable requirements provided in "STANDARD SPECIFICATIONS for PUBLIC WORKS CONSTRUCTION, 2003 Edition," adopted by the City Council of the City of Long Beach, the City of Long Beach Standard Plans, January, 2003 Edition and any amendments thereto, and in accordance with these Special Provisions.

Whenever reference is made to "Standard Specifications," it shall be deemed to mean **"STANDARD SPECIFICATIONS for PUBLIC WORKS CONSTRUCTION, 2003 Edition"**.

If the bidder believes that a conflict exists between said document or said documents and the bid form, the bidder shall request in writing an interpretation of said documents prior to the filling of the Bid. If the bidder fails to make such a request, then the City will assume that no conflict exists. If the bidder is awarded a contract, the bidder shall be bound by the Plans, Specifications, and Bid and shall perform the required work at the price bid.

Notices:

The Contractor shall give advance notice shown below to the proper Agency office, prior to the time each of the following operations is to be commenced:

<u>Operation</u>	<u>Office</u>	<u>Phone</u>	<u>Advance Notice</u>
Design Review	Engineering Section	(562) 570-2030	
Start of Construction	Inspection Section	(562) 570-2085	2 Working Days
*Shutdown of work or resumption of work after shutdown	Inspection Section	(562) 570-2085	24 Hours
*Main shutdown, taps, or tie-ins.	Inspection Section	(562) 570-2085	3 Working Days

*Notice for these operations may be given to the Inspector at the job site in lieu of calling the office.

The Contractor shall also contact Underground Service Alert of Southern California at 1 - (800) 422-4133 not less than 48 hours prior to excavating in each area.

The Contractor shall notify the Long Beach Dept of Public Works, telephone 562.570.6468 at least 48 hours in advance of excavating around, or adjacent to, any of the traffic signal facilities. For traffic signal notification, contact the Electronics Systems Division, telephone (562) 570-2787. All repair work required for these facilities will be

performed by the Bureau of Public Service unless otherwise authorized or directed by the Director of Public Works. In either case, the Contractor shall be responsible for, and bear all costs for, any required remedial work due to damage caused by its operations.

The Contractor shall notify the following agencies at least 48 hours in advance of any excavation work:

City of Long Beach Water Dept (for water, sewer and storm drain)	(562)570-2441
Southern California Edison Company	(800)655-4555
Verizon Phone Company	(800)555-4833
City Light & Power, Inc.	(562)983.-2000

Personnel Qualification Program:

The Contractor shall comply with all the requirements of the Department of Transportation (D.O.T) qualification of individuals performing covered tasks on a pipeline facility, Regulations 49 CFR Part 192 Subpart N. It is the responsibility of the Contractor to be familiar with the requirements of these regulations.

Prior to start of work, the Contractor shall provide adequate documentation to Long Beach Gas and Oil Department to substantiate that he is in full compliance with these regulations. This documentation shall include, but not be limited to; a copy of the Contractor's written D.O.T. mandated Qualification Program.

The contractor shall provide a list of workers and their qualifications shall be submitted to LBGOD prior to commencing work. The contractor must keep this list current for all workers.

Long Beach Gas and Oil Department reserves the right to reject any Contractor that does not meet the aforementioned Qualification Program requirements of the D.O.T. regulations.

Long Beach Gas and Oil Department reserves the right to inspect the Contractor's Qualification Program records, if deemed necessary.

Verification of Related Work Experience:

To qualify for this project, contractors must:

1. Verify that the Contractor has been in business for a minimum of 5 years;
2. Verify that the Contractor has completed 3 natural gas pipeline projects of comparable size and complexity in the last 5 years; and

3. Supply current State of California C-34 (pipeline) or Class "A" contractor's license number.
4. Meet all D.O.T requirements.

In order to comply with Item 2 above, contractors are requested to provide 3 references who can verify their experience in contract construction work involving the installation of underground natural gas steel and polyethylene pipeline systems. The following information must be provided in connection with each reference:

- (a) Identification of the company or government agency involved in a former contract;
- (b) Name of person in that company or government agency who can be contacted;
- (c) Telephone number of person identified (including area code); and
- (d) Description of job, including type of pipe material, size and length of the pipeline.

This information shall be submitted and approved before work is started.

In lieu of the above experience requirements (Items 1 and 2), a contractor shall be deemed to qualify for this project if that Contractor has satisfactorily completed a project of similar size and complexity for Long Beach Gas and Oil Department within the past 10 years.

If, in the opinion of the Project Engineer from Long Beach Gas and Oil Department, any contractor is not technically qualified to perform the work, or the references submitted by the contractor are unsatisfactory, the Project Engineer, may, at his discretion, reject the contractor.

Drug and Alcohol Testing Program:

The Contractor shall comply with all the requirements of the D.O.T. Drug and Alcohol Testing Regulations 49 CFR Parts 40 and 199 for pipeline operators and the Federal Highway Administration Drug and Alcohol Testing Regulations 49 CFR Parts 382 and 40 for drivers of commercial motor vehicles. It is the responsibility of the Contractor to be familiar with the requirements of these regulations.

Prior to start of work, the Contractor shall provide adequate documentation to substantiate that he is in full compliance with these regulations. This documentation shall include, but not be limited to; a current copy of the Contractor's written D.O.T. mandated Drug and Alcohol testing policy indicating:

- Type of tests (pre-employment, preventative, post-accident, etc.) and details of the testing procedures employed;
- Name of the Medical Review Officer and Substance Abuse Professional and an outline of their responsibilities;
- Name of the testing laboratory and proof of N.I.D.A. certification by the U.S. Department of Health and Human Services; and
- Name of the collection agency.

The Long Beach Gas and Oil Department Project Engineer reserves the right to reject a Contractor that, in his opinion, does not meet the aforementioned drug and alcohol testing program requirements of the D.O.T. regulations.

10 days prior to start of construction the Contractor shall submit to the Project Manager a copy of the summary of results of the previous 3 month's drugs tests. This summary should include only the total number of persons tested each month and the number of positive and negative test results for each month. The names of those persons tested shall not be included in the summary report.

Long Beach Gas and Oil Department reserves the right, in accordance with the provisions of 49 CRF Part 199, to inspect the Contractor's program records, upon request.

Scope of Work - Pipeline Mains and Service Lines:

Contractor shall furnish all labor, equipment, tools, and materials, unless otherwise directed.

Construction Activity Requirements – Mains and Service Lines

All new main and service lines shall be pressure tested as specified herein before being tied in to the existing gas distribution system.

Construction Activity Requirements – Pipeline Mains

Ditches shall be excavated to a minimum width so as not to damage the pipe coating during installation and to that depth necessary to provide a minimum coverage of thirty-six (36") inches from the top of the pipe to the final grade, except where greater depths may be required by special highway or road conditions or to avoid obstructions. Approval from LBGOD is required to vary from 36-inch cover.

Contractor shall install the specified type of cathodic protection test wires where insulators are installed as indicated on the drawings. Wires shall be brought to grade and terminate in a curb box in accordance with Attachment A, Standard Drawing A-914 or in the adjacent valve box.

Construction Activity Requirements – Service Lines

Unless indicated or otherwise approved, all new service and branch lines shall be of the same size as of the existing and shall be tested as specified herein before being placed into service within the existing gas distribution system.

Ditches for service lines shall be excavated to a minimum width so as not to damage the pipe during installation and to that depth necessary to provide a minimum coverage of eighteen (18") inches on private property and twenty-four (24") inches in streets and roads from the top of the pipe to the final grade, except where greater depths may be required by special road, alley or private property conditions or to avoid obstructions. Branch services shall be installed with a minimum of twenty-four (24") inches of cover at the lot line crossing. Service line separation shall be in accordance with Attachment A, Standard Drawing A-982.

Inspection:

The Long Beach Gas and Oil Department Inspector will be designated by the Senior Engineer to act on his behalf in monitoring the quality of the work from the standpoint of compliance with specification requirements. If, in the opinion of the Inspector, the quality of the construction work is not satisfactory, the Inspector may direct the Contractor to take whatever steps are necessary to bring the quality of the work up to specification standards or to stop the progress of the work, whichever is appropriate. The Contractor shall comply with all verbal and written orders issued by the Inspector.

Construction Water:

All water used during construction shall be potable water and shall be approved by Long Beach Gas and Oil Department. Water can be obtained from the Long Beach Water Department system by making application for temporary water service to the Commercial Services Bureau of the Financial Management Department, 333 West Ocean Boulevard, Long Beach, CA 90802. The Long Beach Water Department will provide a construction meter for use at the closest fire hydrant available. Charges for this water service will be at the standard established rates of the Long Beach Water Department.

The Contractor shall not use water from any fire hydrant unless said water first passes through a meter provided for the Contractor's use. Furthermore, the Contractor shall not, for any purpose, operate any valve in the Long Beach Water Department system, but shall request any necessary valve operation be done by authorized Water Department personnel.

As-Built Information:

The contractor will maintain a set of plans for the purpose of entering thereon any changes in alignment, elevation or material that may occur during the course of construction and will complete Long Beach Gas and Oil Department's standard Service Order and Report Form for each service line installed.

It shall be the responsibility of the Contractor to provide the Inspector with any requested information relative to the installations.

Permits:

The Contractor shall obtain a no-fee excavation permit from the City Public Works Department (10th floor of City Hall) for excavations in the public right-of-way. All required permits of any other nature shall be furnished and paid for by the Contractor.

Materials Furnished by the Contractor:

The Contractor shall furnish all pipe, fittings, tools, vehicles, materials, supplies and equipment and shall perform all necessary tapping and stopping to complete the project. Materials and supplies to be used on this project shall comply with the following requirements in order to ensure compatibility and uniformity with existing Long Beach Gas and Oil Department facilities and equipment:

Pipe Placing:

Before the pipe is lowered into the trench, the trench shall be cleaned of all debris and a six-inch (6") sand bedding shall be placed and compacted in the trench bottom. The bedding or sand mounds shall be inspected by the Inspector before the pipe is lowered into the trench. Special care must be taken in handling pipe to prevent damage to the pipe and any pipe coatings. Before pipe is lowered into final position, it shall be inspected and abrasions to the pipe or coating shall be repaired.

Pipe installed in open trenches shall be carefully lowered to final grade by hand or by using belt slings. Pipelines, as finally constructed, shall conform to the profile of the excavation at all points and the pipe shall be free from excessive strains after backfilling is complete.

Excavation:

Excavations for pipe trenches and bell holes shall be made by trenching and excavation machines or by hand. All cutting of asphalt and concrete paving on public and private property shall be performed with rotary sawing equipment or by equipment, which grinds and pulverizes the paving material. Concrete shall be saw cut to the full depth of the pavement. All excavated material which is to be reused (subject to the restrictions in the paragraph entitled "Bedding, Backfill and Street Surface Restoration") shall be uniformly piled along trenches and bell holes in a manner, which will avoid interference with traffic, driveways, roads, alleys, sidewalks and other walkways. All other material shall be removed from the site and disposed of by the Contractor at regular intervals, prior to the end of each work week and as directed by LBGOD for public safety and convenience.

If the cut edges of any paved surfaces located in a public street or within the limits of any private property site are broken during the course of construction, they shall be trimmed by saw cutting immediately prior to placing of the permanent asphalt or cement paving.

Trench excavations for portions of service lines located in streets shall have a minimum width of twelve inches (12") measured at the position of the horizontal diameter of the service pipe. The minimum width of the top of the trench shall also be twelve inches (12"). Joint utility trenching shall be performed in accordance with Standard Drawing A-982.

Trenches for pipelines in street and alleys shall have a maximum width of twenty-four inches (24") measured at the position of the horizontal diameter of the pipe. The maximum width of the top of the trench shall also be twenty-four inches (24").

The Contractor shall arrange his work so that a maximum of five hundred feet (500') of trench (with out plates) in a public street or alley shall be open at any time. The trench excavation work shall be followed immediately by the pipe installation crews.

All excavations shall be kept dewatered by pumping or other means, until the construction or installation of facilities is complete. Water must not be allowed to enter the storm drain system.

Cut and Bore Option:

The use of the cut and bore method for installing lines requires the approval of the Gas and Electric Department. If the Contractor wishes to utilize the cut and bore method of installation the following requirements shall be strictly adhered to:

- A. All bellholes through which the pipe passes during insertion into the bore hole will be excavated a distance below the pipe sufficient to allow complete visual inspection by the Long Beach Gas and Oil Department Inspector. This distance shall be a minimum of twelve inches (12").
- B. During insertion, the pipe shall be rotated and wiped clean and all water and debris shall be removed from the bellholes so that the integrity of the pipe and/or coating can be inspected thoroughly.
- C. No piping shall be inserted into any bore hole unless a Long Beach Gas and Oil Department Inspector is present to observe the operation.
- D. All substructures in the path of the proposed pipeline shall be completely exposed prior to insertion of the pipe. Where, in the opinion of the Inspector, the boring operation produces any indication of the possible existence of a substructure interference, a bellhole shall be excavated at that location.

No extra payment will be made for alternative pipeline construction methods. Payment for pipeline construction will be in accordance with the bid proposal, regardless of the construction technique used.

Tie-In Procedures:

All tie-ins are to be performed under the supervision, and subject to the approval, of the Long Beach Gas and Oil Department Inspector. All tie-ins that are performed by Long Beach Gas and Oil Department will be billed to the contractor.

Whenever a line stopper is inserted into a fitting to shut off the flow of gas a pressure gauge shall be installed on both sides of the fitting to ensure that gas pressure to current customers is not inadvertently reduced. Each gauge will be of an appropriate range with respect to the gas main operating pressure. For example, main pressure of 7-10 psig, 15 psig, above 15 psig, will require a 0-60 psig gauge. This requirement may be waived, with permission of the Inspector.

Pressure Tests:

Pipeline Main Pressure Testing:

Upon completion of pipeline installation, the complete pipeline system shall be pressure tested with air or nitrogen and approved by Long Beach Gas and Oil Department. The testing device must be installed and removed in the presence of the Long Beach Gas and Oil Department Inspector. The testing device used for testing mains shall be a circular chart clock recording gauge which shall produce a permanent graphic record of the test results. After all of the pipe joints of the complete system have been fused or welded together, the ends shall be closed and air or nitrogen shall be pumped into the new pipeline system. The system shall be tested at a minimum of 95 psig for not less than 18 hours.

The system shall stand under the test pressure for the specified time duration. If any air or nitrogen escapes, as shown by a drop in gauge pressure in excess of that attributable to temperature changes, during the course of the test, the Contractor shall be required to locate the leak(s) and repair them at his own expense. If the drop in pressure is attributable to a defective weld or fusion joint, the weld or fusion shall be cut out and a new weld or fusion shall be made. In the event that a weld or fusion joint has been cut out and the ends of the pipeline so affected cannot be brought together without damage to the pipe, the contractor shall weld or fuse in a short piece of pipe. The rewelded section of a steel pipeline shall then be field wrapped by the contractor as previously specified herein. After repair work is completed, the testing procedure shall be repeated until the complete system is proved air tight to the satisfaction of the Long Beach Gas and Oil Department Inspector. No additional payment will be made to the Contractor for repair work performed to satisfy the pressure test requirements.

The contractor shall furnish the necessary recording gauges, proof of current calibration, fittings and equipment to pressurize and test the complete piping system with air or nitrogen.

The contractor shall notify the Long Beach Gas and Oil Department Inspector 24 hours in advance when the pipeline system will be ready for pressure testing.

Service Line Pressure Test:

The Contractor shall furnish the necessary gauges, fittings and equipment to pressurize and test each service line installation with air.

Each new service line system shall be air tested as follows:

After the complete service line system has been assembled, air shall be pumped into the system through the shut-off valve at the riser end (or through one of the shut-off valves with the other shut-off in the case of a branched service), through an untapped new service tee, or through a special pressurizing/purging manifold. The air test pressure shall then be increased until the complete system with all its branches, if applicable, has been pressurized to a minimum of 95 psig. The air pressure shall extend from the shut-off valve to the top of the untapped gas main inside the service tee. The plastic system being tested shall be capable of maintaining an air pressure of 95 psig for a period of not less than 30 minutes without any discernible reduction in air pressure when using a gage with a large face diameter by means of which a very small leakage of air during the period of the test can be readily detected. The Contractor shall notify the Long Beach Gas and Oil Department Inspector in advance when service lines will be tested. The Inspector shall witness each service line test. If the service line shows any sign of leakage, the Inspector will designate the air test as a failure.

In the event of failure to pass an air test, the Contractor shall take appropriate steps to eliminate the source of the leakage, at its own expense, and the air test shall be repeated in the presence of the Inspector as many times as necessary to establish the gas tight integrity of the service line system.

Bedding, Backfill and Street and Sidewalk Surface Restoration:

Backfill (including bedding, sand encasements, and trench and pit backfill) shall be constructed in accordance with the applicable provisions of Subsection 306-1.2.1 of the Standard Specifications. However, rocks, broken pavement, or similar materials will not be allowed.

All underground piping shall satisfactorily pass inspection prior to backfilling the trench. The Contractor shall not backfill any trench without the approval of the Long Beach Gas and Oil Department Inspector. Backfilling must not commence until the pipe fits the trench and is at the proper depth and as-built surveys have been completed.

Long Beach Gas and Oil Department supplied plastic warning identification tape shall be placed in all open excavations while they are being backfilled. The tape shall be located approximately one foot (1') below finished grade above pipe and service tees.

Upon completion of the required pipe bedding and sand encasement in streets, alleys, driveways and sidewalks, the trench depth from six inches (6") above the top of the

pipe to not less than one-inch below the bottom surface of the existing A.C. or P.C.C. paving shall be filled with "one sack slurry." Materials for this slurry shall meet the requirements for Class 100-E-100 concrete as specified in Subsection 201-1.1.2 of the Standard Specifications.

Leak testing of piping shall be completed prior to installing permanent pavement. Temporary asphalt surfacing will be required to maintain road service until the permanent pavement is installed. When temporary asphalt is used, it shall be placed four inches (4") thick and compacted.

When any pavement restoration occurs within two feet (2') of an existing construction joint, cold joint, expansion joint, or edge, the pavement between the excavation and the joint or edge shall be removed and replaced in kind along with the excavation paving. It is the bidders responsibility to determine, by site inspection prior to bidding, where these conditions exist and to include the appropriate cost in the base price bid for the pipeline construction. No additional compensation will be paid to the Contractor for extra paving required by these conditions.

Permanent pavement restoration shall commence within 10 working days from completion of construction. Final paving may be delayed long enough to allow for the accumulation of at least one 1 day's work for a crew.

All soils and debris shall be removed daily.

If saw-cutting P.C.C. sidewalks, do so on the score marks or as directed.

Do not disturb local depressions, concrete cross gutters or concrete bus stop street pads. If they are disturbed, the entire structure shall be replaced.

Permanent asphalt street surface restoration shall consist of not less than five inches (5") thick asphalt concrete conforming to the requirements of Class C2-AR-4000 as specified in Section 203-6 of the Standard Specifications. Slurry seal shall be applied for the entire lane width, it shall extend a minimum of 5 feet on either end of AC patch. Permanent concrete street surface restoration shall consist of not less than four inch (4") thick portland cement concrete conforming to the requirements of Class 520-C-2500 as specified in Subsection 102-1.1.2 of the Standard Specifications.

Pavement placement methods shall be as follows:

- (1) Existing concrete pavement on top of an aggregate granular base will require placing concrete on top of the slurry backfill until flush with the existing pavement and surfacing to match the existing finish.
- (2) Existing asphalt concrete pavement on top of aggregate granular base will require placing asphalt concrete on top of the slurry backfill and rolling to match the existing pavement grade. The asphalt concrete shall be applied in two layers, base course and wearing course. The wearing course shall have a

minimum thickness of one-inch (1") plus or minus one-quarter of an inch (1/4"), and shall be rolled to match the existing pavement grade.

The Contractor shall employ sufficient personnel and equipment necessary to expeditiously accomplish proper placement and compaction of the asphalt concrete pavement to the satisfaction of the Inspector.

Backfilling and Surface Restoration Requirements on Private Property:

Sand bedding of the pipe in open excavations shall be performed as specified in the preceding paragraph entitled "**Bedding, Backfill and Street Surface Restoration**".

The use of native materials from excavations on private property as fill shall be permitted, except that material such as stones, pieces of wire, concrete, etc., shall not be allowed. Backfill material containing hard lumps of clay, adobe, etc., shall be permitted; however, the Contractor shall take whatever steps are necessary to prevent the consolidated soil pieces from coming closer than six inches (6") to any portion of the plastic service line system. Use of native soil is subject to approval by LBGOD Inspector

Backfill compaction on private property shall be done with a pneumatic hand-tamping machine.

Plastic warning identification tape shall be placed in all open excavations while being backfilled. The tape shall be located one foot below finished grade over the plastic pipe.

All concrete used for the restoration of driveways, sidewalks, etc., shall be as specified for street surface restoration. Where driveways, walkways or other concrete paving on private property is cut it shall be replaced to the nearest existing joint or edge and the finished surface shall match the existing in all respects.

Guarantee:

The Contractor shall guarantee all work done against failure due to defective materials and/or faulty workmanship for a period of 1 year from date of acceptance of the completed project by Long Beach Gas and Oil Department unless some other period is expressly set forth.

Whenever any work is to be guaranteed or maintained by a manufacturer, supplier or subcontractor, said obligations shall be that of the Contractor insofar as Long Beach Gas and Oil Department is concerned.

In view of the constraints which the Public Works Department of the City of Long Beach may impose on any excavation necessary to perform substructure repair work after the street improvements are completed, every precaution shall be taken to ensure that the gas main installation is carried out in such a manner as to eliminate, as far as possible, any flaws which might generate a requirement for future remedial work. In particular, every conceivable effort must be made to preclude any possibility of the new gas main being laid in such a manner that it might come into contact with any other substructure, either inadvertently during installation or as the result of future ground movement.

If within a period of 1 year following acceptance of the completed installation, surveys indicate the possibility of either a gas leak or a cathodic protection current drain, Long Beach Gas and Oil Department will perform the necessary excavation to expose a section of the line at that location. If the problem, in the opinion of Long Beach Gas and Oil Department, originated during the installation work performed under the contract, the Contractor shall reimburse Long Beach Gas and Oil Department for all repair costs associated therewith, including all excavation, backfilling and paving in accordance with the requirements of the City of Long Beach Department of Public Works. Should the problem prove to have been caused though no fault of the Contractor, Long Beach Gas and Oil Department will assume liability for the necessary repair work at that particular location.

LIST OF ATTACHMENTS

<u>ATTACHMENT</u>	<u>TITLE</u>
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A..... Standard Drawings

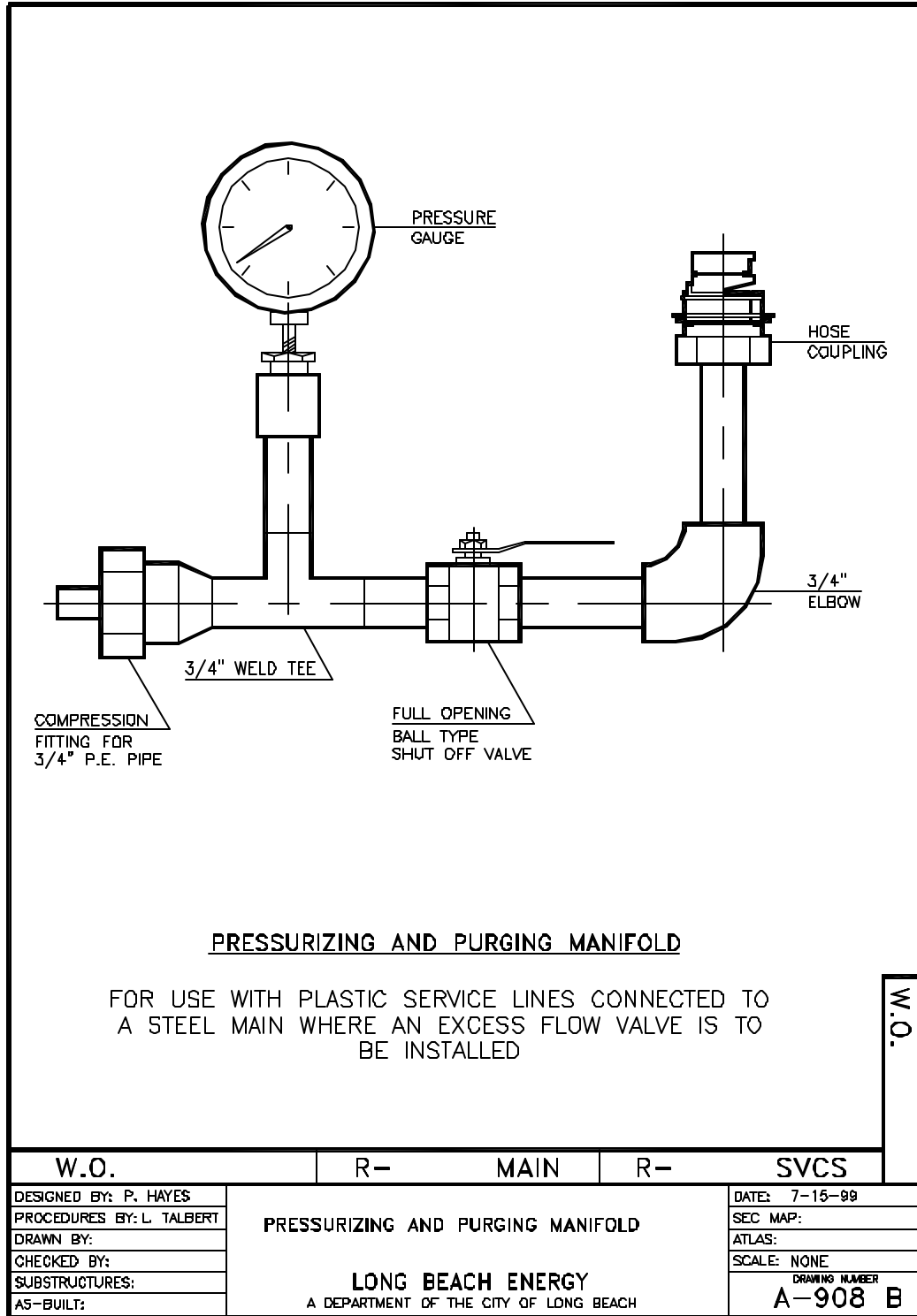
Drawing A-909	PE Service w/ Anodeless Riser Assembly Connected to PE Main
Drawing A-909A	PE Service w/ Anodeless Riser Assembly and EFV Connected to PE Main
Drawing A-982	Joint Utility Trench Detail
Drawing A-983	Gas Piping Installations for Meter Rooms
Drawing A-985A	Typical Stub-Out Diagram For Multiple Gas Meter Installation
Drawing A-996	Typical Installation of 2" PE Ball Valve
Drawing A-997	Typical Installation of 4" or 6" PE Ball Valve
Drawing A-990A	Domestic Meter Cabinet Requirements
Drawing A-1001 THRU 1012	Standard Meter Assembly

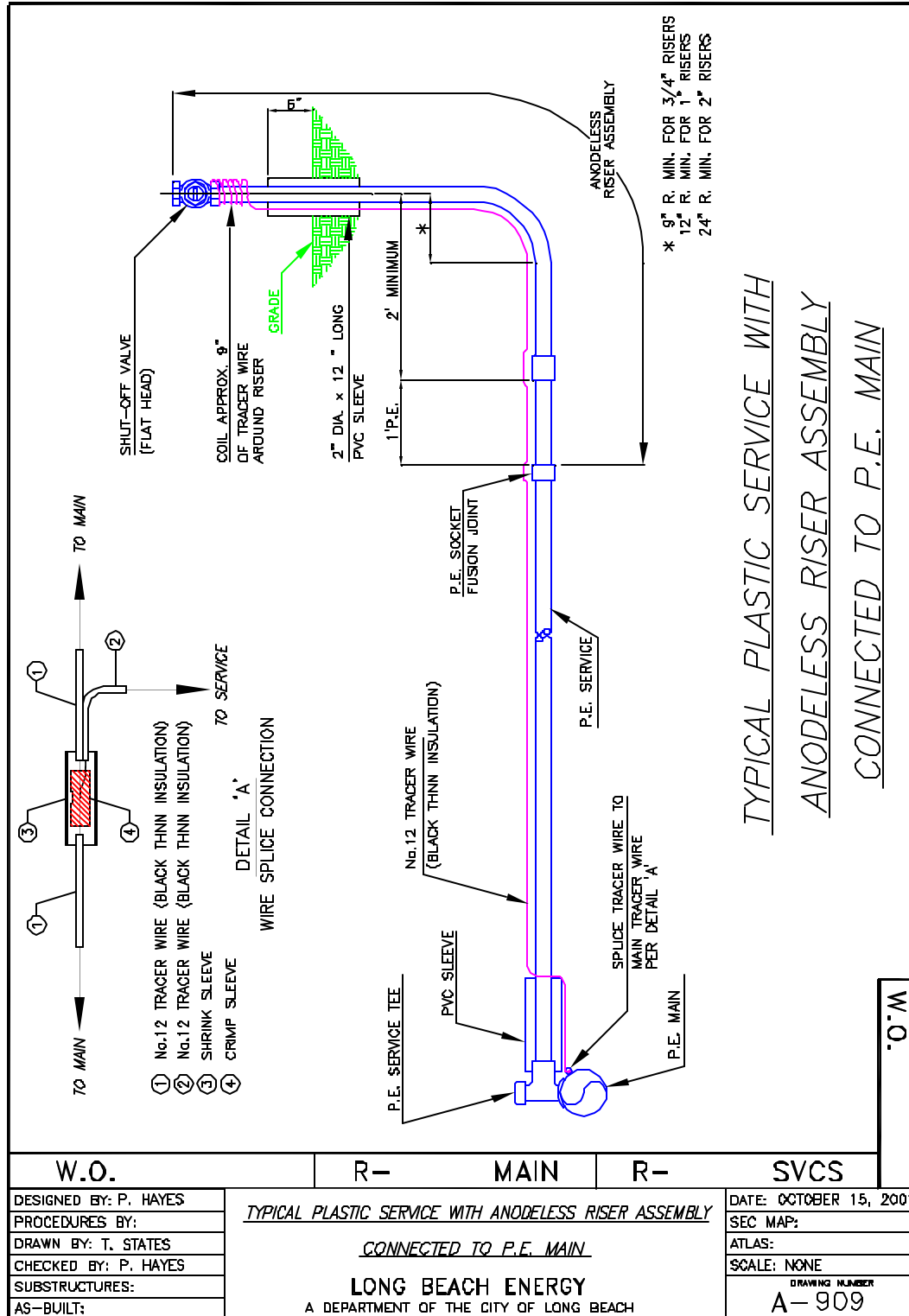
ATTACHMENT A

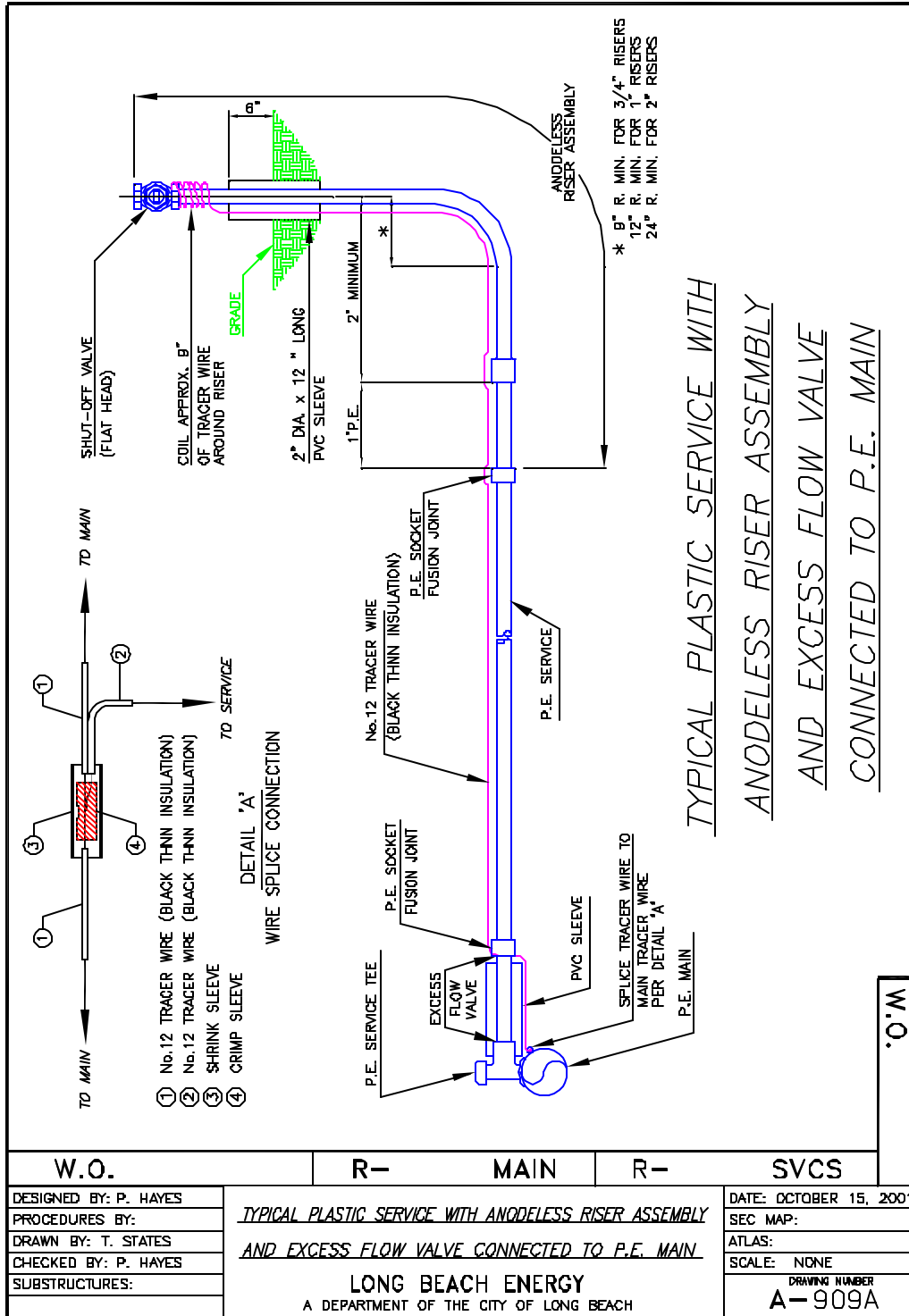
STANDARD DRAWINGS

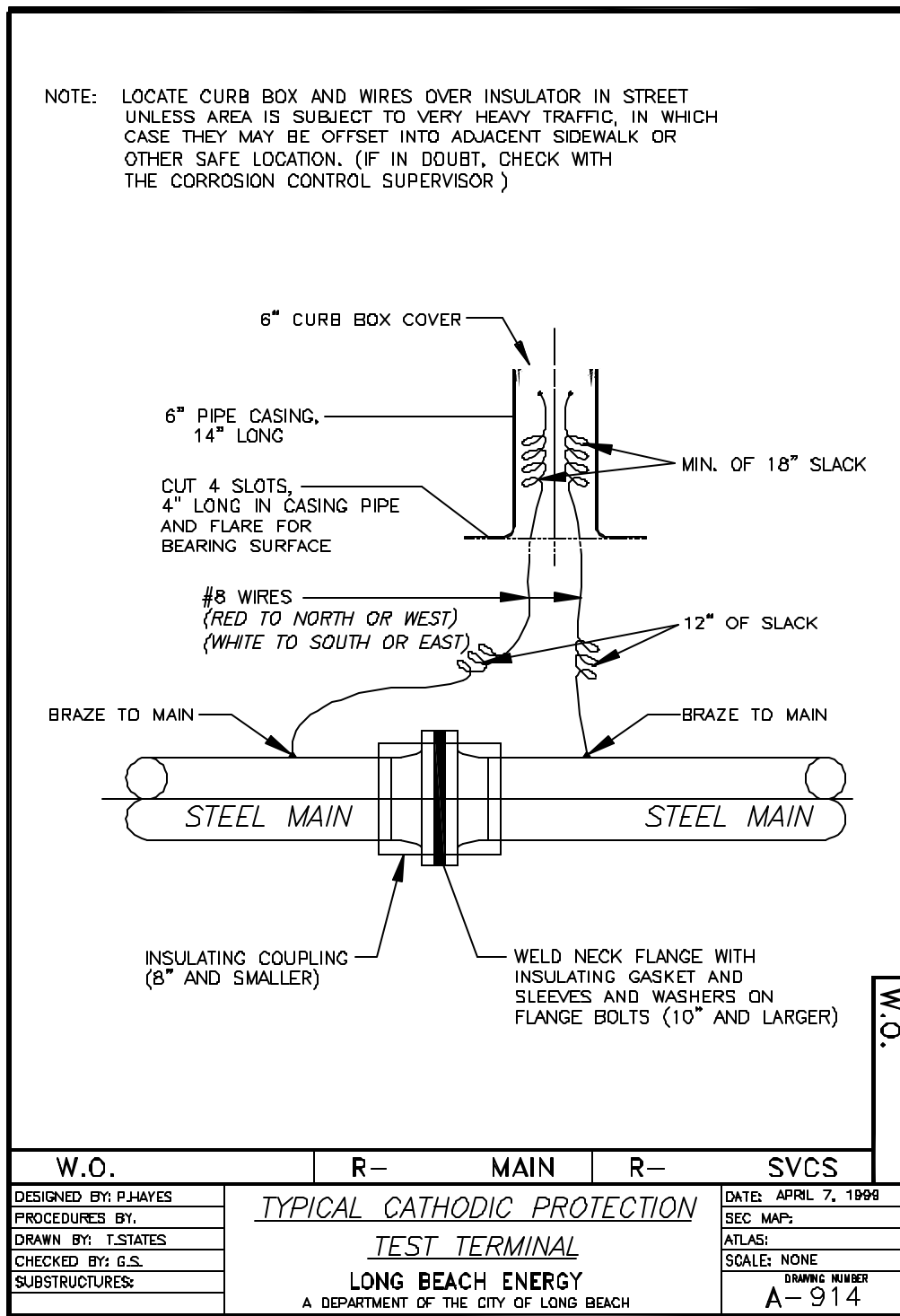
Drawing A-908B

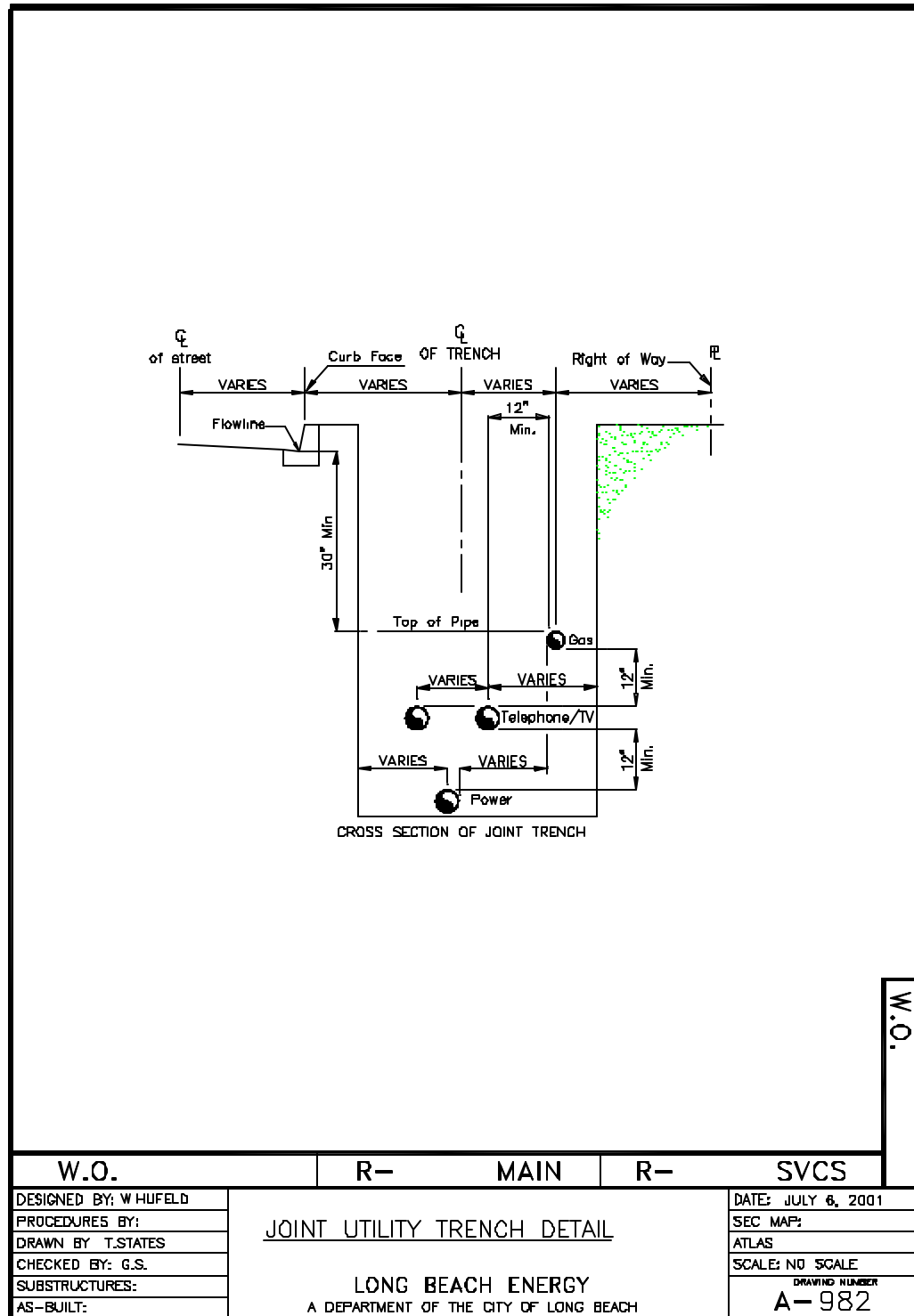
Pressurizing and Purging Manifold

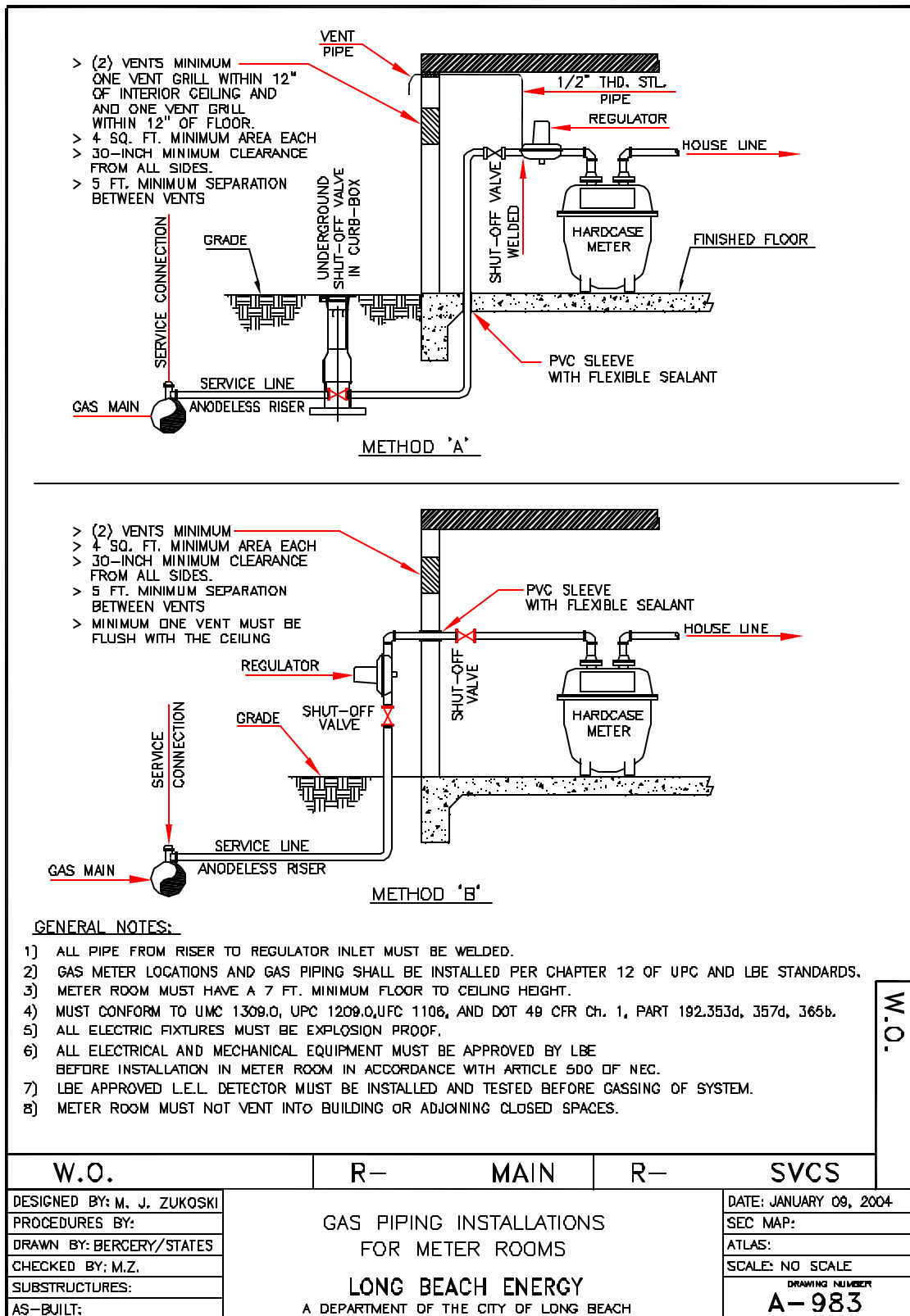


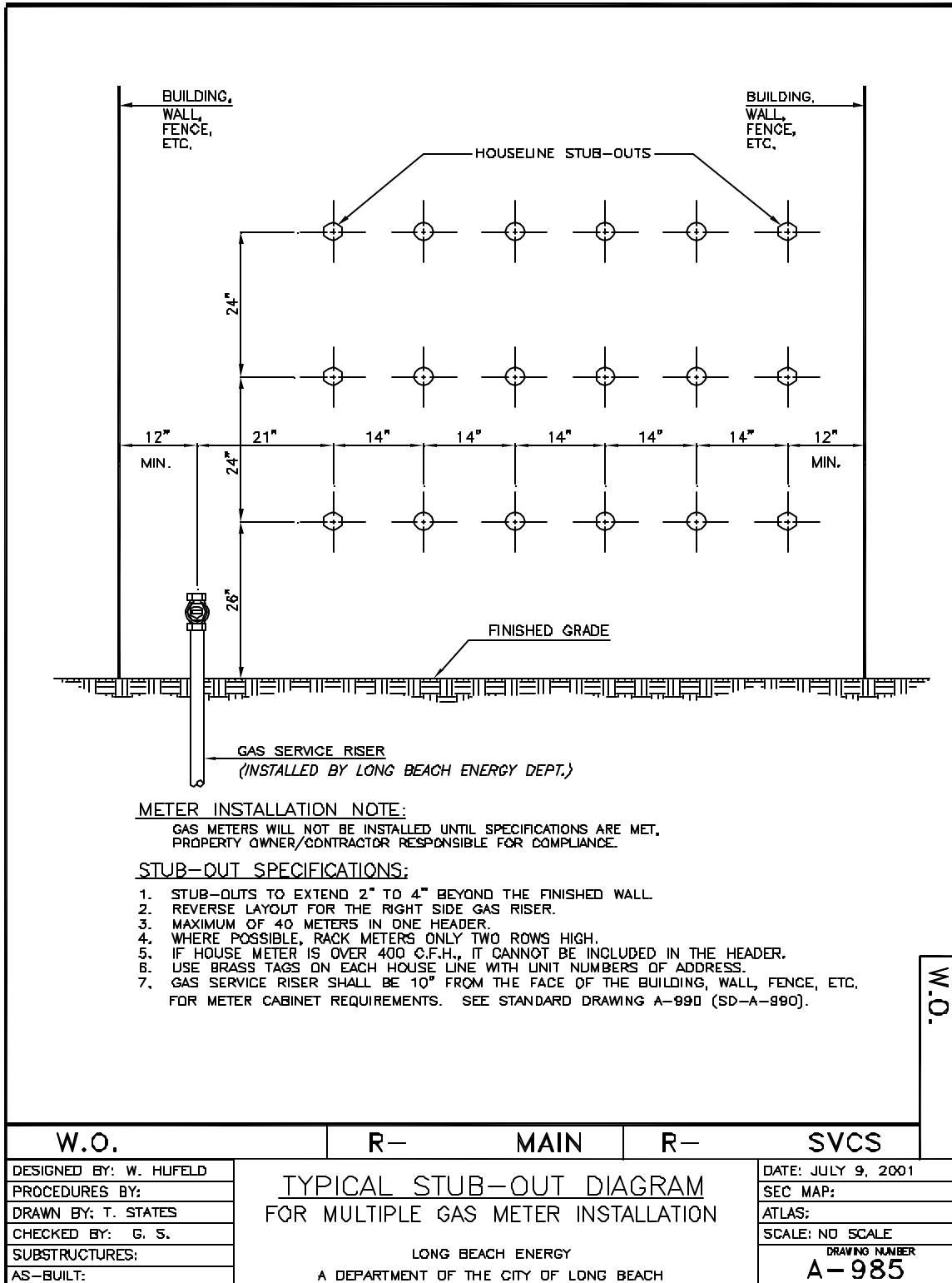


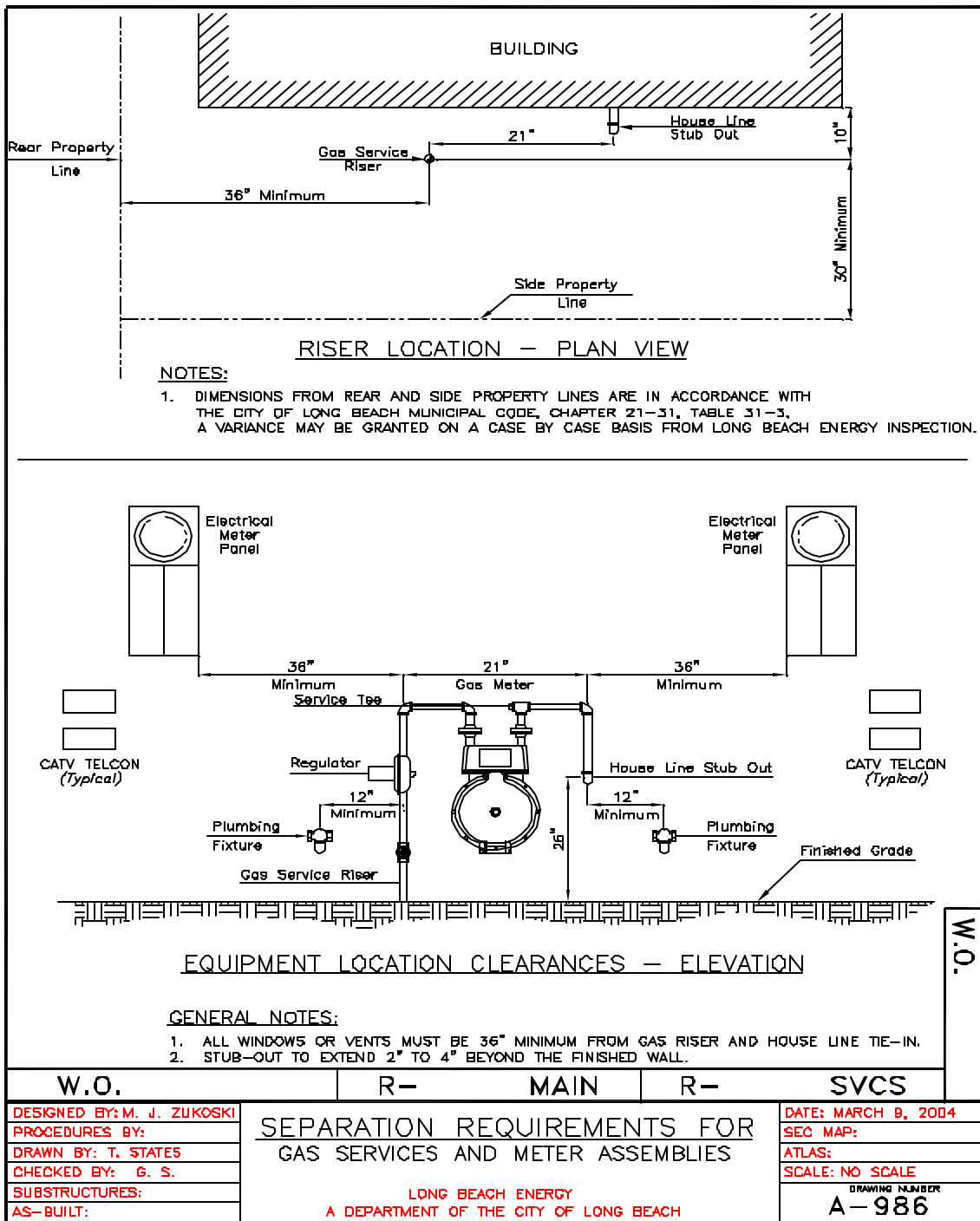




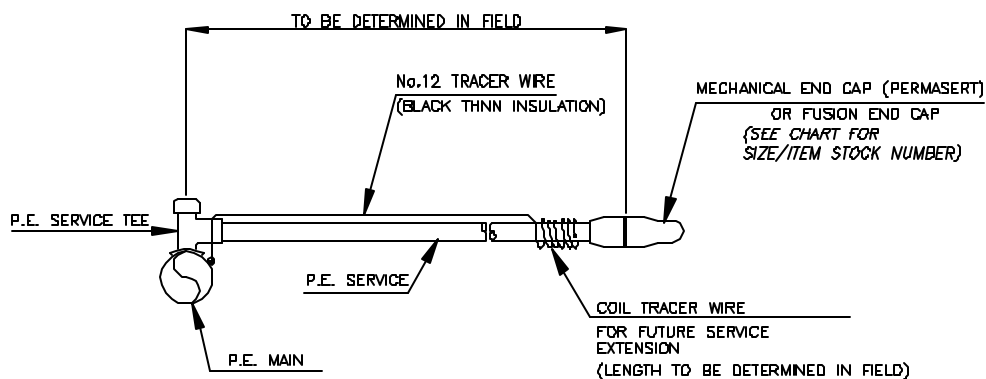








MECHANICAL END CAP (PERMASERT)	
P.E. PIPE SIZE	ITEM STOCK NUMBER
3/4"	659-27-11-080
1"	659-27-11-082
1 1/4"	659-27-11-084
2"	659-27-11-086



TYPICAL PLASTIC SERVICE STUB-OUT
WITH MECHANICAL END CAP
CONNECTED TO P.E. MAIN

W.O.

W.O.	R- MAIN	R- SVCS
DESIGNED BY: M. ZUKOWSKI	<u>TYPICAL PLASTIC SERVICE STUB-OUT</u> <u>WITH MECHANICAL END CAP</u> <u>CONNECTED TO P.E. MAIN</u> LONG BEACH ENERGY A DEPARTMENT OF THE CITY OF LONG BEACH	DATE: OCTOBER 2, 2001
PROCEDURES BY:		SEC MAP:
DRAWN BY: T. STATES		ATLAS:
CHECKED BY: G.S.		SCALE: NONE
SUBSTRUCTURES:		DRAWING NUMBER
AS-BUILT:		A- 989

